

**EOSDIS IV&V
Monthly Status Report
For the Period 1/1/96 to 1/31/96
(Deliverable 0203.7)**

February 15, 1996

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1. PROGRAMMATIC INFORMATION

1.1 IV&V Project Organization Chart

Exhibit 1-1 illustrates the current organizational structure of the EOSDIS IV&V team. The approximate number of personnel assigned to each technical task is also indicated.

1.2 Overview of Work Being Performed

a) Key Recent Accomplishments

- **Programmatic**

- Submitted IV&V Self Evaluation Report, assessing performance during the first half of this contract year.
- Coordinated the continued development of the Project Issue Tracking System (PITS). This new system provides an automated mechanism to track significant program issues and help ensure closure. Created a system implementation plan, began populating the PITS with Technical Issue Memoranda (TIMs), and conducted several internal IV&V meetings to review progress.
- Worked with IV&V COTR to draft new Task 6B SOW, and provided SOW inputs for the rescoping of Task 7. Received approval on Task 6B; approval pending on Task 7.
- Submitted application to bring GeoControl Systems (GSC) onto the EOSDIS IV&V contract under the Mentor/Protege program. GSC has strong simulation credentials and would be helpful in supporting the Test Management Database (TMDB) and the System Validation Laboratory (SVL) in West Virginia.

- **Technical**

- Under Task 4B, continued development of the Project Issue Tracking System (PITS) and provided PITS end user training. Also, updated the Test Management Database (TMDB) with Component Acceptance Test (CAT) and SI&T test procedure data.
- Under Task 5B, delivered TAM on Release A Requirements Criticality Assessment, and revised project plan to match HITS revised end-to-end modeling strategy.

Exhibit 1-1: Org Chart (Landscape)

- Under Task 6, conducted ECS Release A CARA and delivered Independent Release Verification Plan (IRVVP) for Release A on 1/31/96. Also, submitted TAM on IR-1 Test Results on 1/18/96.
- Under Task 7, continued ECS development assessment and GSFC DAAC M&O assessment by conducting interviews and reviewing relevant documentation. Also, initiated EOSDIS Hardware Assessment activity and continued developing CCM Basic System Prototype.
- Under Task 9B, completed TAM for the December version of the ECS-SCF ICD, and prepared impact statements for five CCRs. Also, provided TBX metrics for the ECS-to-NOAA ADC ICD.
- Under Task 10C, developed and delivered baseline IR-1 Component Test Procedures on 1/15/96. Also, began dry-runs for IR-1 component testing.
- Under Task 11A, delivered IR-1 Review Version I&T Procedures on 1/26/96. Also, developed detailed schedule plans for staffing the I&T test activity and supported ongoing analysis of joint test efforts for TRMM and Landsat 7.
- Under Task 13B, completed executing the last 35 V0 IMS test scenarios. Also, analyzed WWW V0 Gateway test data and prepared TAM documenting results.

Additional status information on each of the technical tasks can be found in Appendix A.

b) New/Proposed Task Assignments

- We recommend a task to provide IV&V of the Composite Infrared Spectrometer (CIRS) instrument to be used on the Cassini spacecraft. This work fits well under the IV&V contract charter, since it primarily involves design analysis and requirements validation associated with the Power Converter Assembly (PCA) of the CIRS instrument.

1.3 Overview of Schedule Status

Exhibit 1-2 presents the latest, high level milestone chart (i.e., dated February 9, 1996) for all technical tasks assigned on the EOSDIS IV&V contract. In addition, Exhibit 1-3 lists in chronological order the deliverables/milestones associated with the contract for both the current month and the next month, as well as the status of each deliverable/milestone.

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Exhibit 1-2: Milestone Chart (Landscape)

*EOSDIS IV&V Monthly Status Report
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Expected Date Due	Dependency	Milestone/Deliverable	Task #	Status*	Comments
1/5/95		ISE M&O Status Report	4B	C	Submitted on time.
1/15/96		EOSDIS Test Version Component Acceptance Test Procedures for ECS IR-1 (Baseline)	10C	C	Submitted on time.
1/26/96		EOSDIS Test Version I&T Procedures (Review)	11A	C	Submitted on time.
1/31/96	IR-1 Sys I&T (end)	IR-1 Test Results TAM	6	C	Submitted ahead of schedule on 1/18/96. (Note: The original delivery date was based on CSR. Since CSR was replaced by the IR-1 Test Debrief which occurred on 1/31, the new delivery date became 1/31.)
1/31/96	ECS Rel A CDR + 5 Months	Release A IRVVP (Final)	6	C	Submitted on time.
2/2/96		First ICE Information Exchange Meeting	7	C	Conducted on time.
2/16/96		ISE Release 1 Demonstration (ISER1)	4B	O	
2/16/96		Second ICE Information Exchange Meeting	7	IP	
2/20/96		Basic CCM System Prototype	7	IP	Work proceeding on schedule.
2/29/96		ECS Release A Rqmts Analysis TAMs (Total of 3)	5B	O	
2/29/96		Task 6B Monthly Metric Report	6	O	
2/29/96		Third ICE Information Exchange Meeting	7	O	
No Later Than 2/29/96		EOSDIS Test Version I&T Procedures (Baseline)	11A	O	

* C = Completed, IP = In Process, O = Open, D = Delayed, CX = Canceled

Note: *Italics* indicates tasks that are not yet activated.

EXHIBIT 1-3: Status of Milestones/Deliverables

1.4 Performance Assurance Activities

- **Performance Assurance Activities**

- IV&V personnel received PITS training in January from the Task 4 system developers. They were also given the opportunity to test and debug the system.

- As requested, IV&V personnel received one-on-one Clearcase training at Hughes in January. (Clearcase is a CM tool which simplifies the sharing of controlled information.)
- In preparation of upcoming support requirements, IV&V team members attended the ECS IR-1 training given at Hughes on January 16 - 19. In addition, members of Tasks 10 and 11 attended SSI&T and M&O training provided at both Landover and the GSFC DAAC facility.
- IV&V System Administrators are planning to access the Goddard Learning Center for additional training in UNIX. This training is intended to enhance support of the Sun-based tools used on the program.
- IV&V management is currently assessing our CCR document review process to improve overall accountability and to manage by priority.

1.5 Major Short Term Activities Planned

- **Program-wide Activities**

- Prepare for next Findings Meeting with ESDIS management scheduled for 2/23/96.
- Prepare materials for the upcoming EOSDIS Ground System (EGS) Status Review (ESR).
- Ensure smooth initiation of IR-1 Component test and I&T test activities.
- Begin Task 14, Cassini Spacecraft Integration and Test Analysis.
- Oversee the population and implementation of the PITS system.

- **Task-specific Activities**

- For Task 4B, continue PITS development and maintenance. Also, conduct ISE Release 1 Demonstration (ISER1).
- For Task 5B, continue quality/trace analysis on Release A requirements, and continue revised End-to-End Modeling Verification/Validation activities.
- For Task 6, begin Release A software development analysis. Also, begin Release A test witnessing activities.

- For Task 7, conclude data gathering activities associated with ICE and conduct First, Second, and Third ICE Information Exchanges. Also, deliver CCM Basic System Prototype.
- For Task 9B, review and provide comments on six new EDOS ICDs, DDF-Source Systems ICD, ECS-NOAA ICD, and others. Also, evaluate the resolution of various CDR/IDR problems.
- For Task 10C, execute IR-1 Component Test at GSFC, LaRC, and EDC. Also, develop IR-1 Component Test Report.
- For Task 11A, support dry runs of test procedures and begin IR-1 I&T testing. Also, continue to develop plan for Version 1 I&T test program.
- For Task 13, complete plan for V0 IMS controlled load testing and start the testing. Also, continue executing GUI scenarios and collecting performance data for Extended Duration V0 analysis.

1.6 Key Long Range Plans/Schedules

The IV&V team will support the activities and milestones identified in Exhibit 1-2. Emphasis will be placed on those activities that are on the critical path to support the on-time launch of the spacecraft. Such activities include supporting System Integration, performing Interface and Integration Testing, and conducting System Certification.

Based on recent budget constraints and new direction from NASA, the team will emphasize its System Integration and Test (SI&T) role and narrow its IV&V focus to those activities that support successful SI&T. Other IV&V functions will be secondary and will be prioritized based on available funding.

2. FINANCIAL/CONTRACTUAL INFORMATION

**This Section
Has Been Removed
Due to Proprietary Content.**

APPENDIX A

TECHNICAL TASK STATUS INFORMATION

Task # 4B: IV&V Infrastructure and Tool Development

a) Task Accomplishments

- Delivered the quarterly ISE Maintenance and Operations Status Report on 4 January.
- Updated the Test Management Database (TMDB) with Component Acceptance Test (CAT) and System Integration and Test (SI&T) test procedure data from the latest document revisions.
- Continued development of the Project Issue Tracking System (PITS). Functionality completed includes:
 - Data entry for Technical Issue Memoranda (TIM) including impacts, recommendations, closure criteria, relationships, and resolution chronology.
 - Initial TIM print capability allowing print to printer or to file.
 - Database query capabilities including metadata, date range, and search string query functionality.
- Provided PITS end user training to 30+ individuals working EOSDIS IV&V.
- Completed population of the EOSDIS IV&V Homepage TAM Library with available TAMs.
- Modified the Automated Requirements Database (ARDB) including:
 - Recoded trace analysis dialog screen. It now loads release information one record at a time with on screen display. This is much faster and provides real time feedback to the end user.
 - Enhanced requirement selection screen. All requirements with issues entered in the ARDB are now highlighted in red. This is the first step toward maintaining status for each requirement.

b) Issues/Concerns

- By previous agreement, IV&V expected CSC to post RID closure information to the IVV-RID mailbox as RIDs were closed. No RID closure information has been received to date regarding the August, October, or November reviews. As a result, the Issue/Discrepancy Handling System (IDHS) has not been updated to allow analysts to check the status of submitted RIDs.

c) Subcontractor Performance

- EWA performance during this reporting period was very good. They supported system administration activities for the Fairmont facility, as well as the development and maintenance of the EOSDIS IV&V Homepage and the EGS I&T Homepage. EWA also supported the development of the PITS.

d) Planned Activities

- Continue PITS development and maintenance. Identify process for dumping data from the PITS repository to Excel and Minitab so that trend analysis can be performed.
- Conduct ISE Release 1 Demonstration (ISER1) in late February.
- Continue development, maintenance, and support of the EOSDIS IV&V Homepage, EGS I&T Homepage, ARDB, TMDB client/server tools, and the IDHS application.
- Upgrade Sybase from v10.0 to v10.02.
- Support program meetings and briefings as required.

Task # 5B: Requirements Analysis and Traceability

a) Task Accomplishments

- Evaluated HITS End-to End Modeling workshop as directed.
- Reviewed ESDIS Operations Concepts document and provided comments to D. Jamison and B. Watt (CSC).
- Revised project plan to match HITS revised end-to-end strategy by proposing IV&V verification of Menasce model and HITS end-to-end spreadsheet in addition to BONeS.

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- Reviewed CCRs noted below and provided comments to CCB:

505-01-41-090	Deliver Data to Higher Level Processing
505-41-40-001	Baseline the ECS to SCF Interface Control Document
505-41-37-001	Baseline the ECS to Version O Interface Control Document
505-41-41-002	Baseline the ECS to TSDIS Interface Control Document

- Supported Task 6 in Release A SDPS Criticality Analysis and Risk Assessment (CARA).
- Delivered TAM on Release A Requirements Criticality Assessment on 1/16/96.
- Began working on TAM for SCDO Release A Requirements Traceability Assessment.

b) Issues/Concerns

- The ESDIS January Requirements meeting resolved the HITS baseline and RTM revision issues of December. However, issues related to duplicate efforts vs out-of-date findings trade-offs still need to be worked. Pursuing with B. Clinard and T. Ackerson.
- CCR review is a high priority with the Requirements Manager; but impact on SOW delivery dates needs close monitoring.
- The resources needed to perform the Requirements to Operational scenario trace is still an issue. Working with Modeling Manager, C. Daly and D. Jamison/M. Simons to resolve.

c) Subcontractor Performance

- Subcontractor performance has been very good.

d) Planned Activities

- Continue quality/trace analysis on Release A requirements.
- Continue revised End-to-End Modeling Verification/Validation activities.

- Coordinate with Requirements Manager and HITS to revise plan/schedule to support Requirements rework as needed due to multiple HITC Requirements baselines.
- Support program meetings and briefings as required.

Task # 6: ECS Development Analysis

a) Task Accomplishments

- Conducted the ECS Release A CARA on January 23-24, 1996.
- Developed Independent Release Verification Plan (IRVVP) for Release A, incorporating CARA results. IRVVP was delivered on 1/31/96, as planned.
- Concluded IR-1 test witnessing activities at EDF. Witnessed tests at GSFC DAAC. Updated IR-1 Test Results Report (TAM) and submitted to ESDIS Project on 1/18/96.
- Met with ESDIS and HITS QA to establish approach to obtain ECS IR-1 code to be used by IV&V to calibrate McCabe tools to generate design/code metrics for ECS Releases A and B.
- Began planning and data gathering for Release A CARA. Began correlating ECS Release A requirements criticality and risk information to be used as part of CARA process.
- Completed Task 6B SOW for period of performance beginning 2/1/96 through 9/30/96.

b) Issues/Concerns

- None.

c) Subcontractor Performance

- Subcontractor performance has been excellent.

d) Planned Activities

- Begin Release A software development analysis. Work with ESDIS Project and ECS contact points to establish process for obtaining ECS portions of software code for critical ECS subsystems identified in CARA. Begin processing code through McCabe tool.
- Begin Release A test witnessing activities. Develop IV&V test witnessing plan and work with ESDIS Project and ECS contact points to coordinate IV&V scheduling aspects and attendance at test status meetings.
- Perform EOSDIS document and CCR reviews. Submit TAM documenting review comments on SDPS Release A Database Design and Schema Specification, due on February 12, 1996. Provide comments on ECS Release A Operations Scenarios document.
- Revisit FOS design repository issue identified by IV&V during the FOS Release A/B CDR timeframe. Run StP consistency checker to generate consistency metrics.
- Support program meetings and briefings as required.

Task # 7: Programmatic and Process Analysis

a) Task Accomplishments

- For ECS development assessment, completed most Function Point count meetings and subsystem development environment interviews. Prepared for First Information Exchange scheduled for 2/2/96.
- For GSFC DAAC M&O assessment, completed Real Decisions (RD) questionnaire and gathered most of the remaining supplementary data. Began data analysis effort.
- Conducted EOSDIS Hardware Assessment Kickoff Meeting with Gartner. Forwarded Bills of Materials (BOMs) and other documentation to Gartner for review. Began assessment activity.
- Met with Dr. Barkstrom to discuss Community Cost Model (CCM) and associated database design/implementation strategies. Continued development work on Basic System Prototype scheduled for delivery on 2/20/96.

b) Issues/Concerns

- The time available to conduct a thorough ICE assessment is very short. We have compressed the schedule to the maximum extent possible, and all subcontractors are trying to gather information as quickly as possible. Any delays in obtaining the necessary data severely compromises the effort.
- Hardware purchase costs are being assessed by examining the Bill of Materials (BOMs) associated with each system component and determining the should costs of those items in the future based on technology trends and product life-cycle stages. However, this is not a relevant assessment mechanism for the EBNet component, since their hardware purchases are bound by SEWP contract agreements. We are currently considering alternative ways to assess EBNet hardware costs.

c) Subcontractor Performance

- SPR (ECS Assessment) has performed very well, maintaining a good rapport with the ECS development team, conducting key interviews, and providing high quality feedback when requested.
- Gartner (Hardware Assessment) has just recently been engaged and has come up to speed very quickly, analyzing materials, establishing key points of contact, and organizing their approach. They have made a strong start.
- Real Decisions (DAAC M&O) has performed satisfactorily to date. They have maintained regular contact and most of the data they requested has been transferred over to them. They need to become more comfortable with providing detailed feedback and with supporting interim milestones to a greater extent.

d) Planned Activities

- Conclude data gathering activities associated with the ICE effort.
- Meet with Hughes to discuss issues related to the scope of the ECS assessment effort.
- Conduct First, Second, and Third ICE Information Exchanges. Goal is to provide preliminary results of ICE assessment by end of February.
- Deliver CCM Basic System Prototype on 2/20/96.
- Begin CCM system enhancement activities related to file outputs and underlying subsystems.
- Support program meetings and briefings as required.

Task # 9B: Key Interface Analysis

a) Task Accomplishments

- Completed TAM for the December 1995 version of the ECS-SCF ICD. Also, converted E-mail review comments on the EDOS-EGS ICD into TAM format.
- Prepared impact statements for five CCRs: Baselineing of the ECS-TSDIS ICD, Baselineing of the ECS-NOAA ADC ICD, Baselineing of the ECS-SCF ICD, Baselineing of the ECS-V0 ICD, and ERSDAC's ASTER GDS PDR Analysis Updates.
- Provided TBX metrics for the ECS-to-NOAA ADC ICD (12/95) to J. Roeder.
- Coordinated IV&V comments on SCF- ECS ICD with HITS and ESDIS, and on ECS-V0 ICD with ESDIS.
- Participated on FOS team and CSMS team for IV&V's Release A CARA (2 days). Assigned criticality and risk ratings for each subsystem in a variety of technical areas.
- Summarized findings-to-date on the ESDIS Risk List interface risks and provided to Candace Carlisle.

b) Issues/Concerns

- None.

c) Subcontractor Performance

- CTA is the task lead for this effort. Their performance has been very good.

d) Planned Activities

- Complete CCR Analysis Reports for Baseline of the ECS-NOAA ADC ICD, ERSDAC's ASTER GDS PDR Analysis Updates, and Baseline of the Landsat 7 ECS ICD.
- Review and provide comments on:
 - Six new EDOS ICDs (TST, Aster GDS, ETS, EBNet, NOAA, EGS)
 - NCCDS - MOC ICD
 - ECS - MITI Aster ICD
 - SDPF Consumer Products Interface Specification document
 - DDF - Source Systems ICD
 - ECS-Landsat-7 ICD
 - ECS - NOAA ADC ICD
 - LaRC and GSFC DAAC ICDs (if delivered)
 - TSDIS to TSUs Specification
- Evaluate the resolution of CDR/IDR problems in the following updated ICDs: ECS-SCF ICD, ECS-NOAA ICD, and the ECS-V0 ICD. Write TAMs if warranted.
- Provide further analysis of the ESDIS Risk List, based on direction from Candace Carlisle.
- Support program meetings and briefings as required.

Task # 10C: EOSDIS Independent Component Acceptance Test

a) Task Accomplishments

- Developed and delivered baseline IR-1 Component Test Procedures on 1/15/96. DAAC comments were received after baseline was published, and will be factored into actual tests and future redline delivery.
- Continued to attend ETS development informal system design reviews.
- Attended SSI&T and M&O training provided by HITS contractor at Landover and the GSFC DAAC facility.
- Supported final IR-1 HITS test witness TAM in conjunction with Task 6. Also began dry-runs for IR-1 component testing.
- Developed detailed schedule plans for staffing of component test activity, and conducted team/M&O training and dry runs prior to start of official component test activity.

- Developed and coordinated slide presentation for IR-1 Component Test Kickoff Meeting on 1/29/96. Refined metrics and test acceptance approach.
- Conducted extensive test team and ESDIS discussions relative to initiation of Component Test of IR-1, set to begin on 2/1/96.

b) Issues/Concerns

- Continued emphasis on training and dry runs for component test remains high task priority.

c) Subcontractor Performance

- Subcontractor performance has been good; however, continued emphasis should be placed on staff planning and time scheduling.

d) Planned Activities

- Finalize and publish redline detailed test procedures.
- Execute IR-1 Component Test at GSFC, LaRC, and EDC.
- Develop IR-1 Component Test Report in late February / early March timeframe.
- Support program briefings as required.

Task # 11A: EOS Ground System Integration and Test

a) Task Accomplishments

- Completed development of IR-1 Review Version I&T Procedures based on limited comments received; delivered on schedule on 1/26/96. Due to delays resulting from the furlough, the Baseline I&T Procedures will be delivered immediately prior to test start in late February.
- Presented detailed test approach plan and procedure briefing for SMO I&T Team and Integration Manager on 1/25/96 at team technical exchange.
- Action Items from DAAC One-on-One Meetings remain pending. Continuing discussions with Code 505 personnel on disposition status. Completed EDC minutes and draft action items; continuing to wait for SMO feedback on minutes content prior to final distribution.

- Delivered a comprehensive Level 4 I&T tracking schedule. Added dates for major possible joint tests and integration steps for SSI&T. Constructing top level schedule for use by Integration Manager for briefing of test program to outside community and senior managers.
- Supported ongoing analysis of joint test efforts for TRMM and Landsat 7.
- Attended SSI&T and M&O training provided by HITS contractor at Landover and the GSFC DAAC facility.
- Developed detailed schedule plans for staffing of I&T test activity, and performed limited team training and dry runs during component test startup activities.
- Began extensive planning efforts for Version 1 I&T plan and procedure activities. Built requirements matrices for Version 1 using December 21 version of RTM.
- Began work with ongoing HITS and ESDIS team to support MODIS Release B functionality capability check using Release A delivered system (engineering tests).

b) Issues/Concerns

- Major push on training and test procedure dry runs is key to I&T success for IR-1.

c) Subcontractor Performance

- Subcontractor performance has been good; however, continued emphasis should be placed on staff planning and time scheduling.

d) Planned Activities

- Continue planning for revised IR-1 and Release A schedules; incorporate DAAC comments into Baseline Test Version I&T Procedures.
- Determine any needed revisions to SI&T IR-1 Test Procedures to incorporate joint testing activities. Continue meetings with TRMM and TSDIS personnel to define joint test objectives.
- Support dry runs of test procedures during time remaining before formal test start.
- Review use of TMDB and TDM tool for Task 11 support. Complete development of TMDB, and transition resources to other ongoing I&T activities.
- Begin IR-1 I&T testing on 2/23/96.

- Continue to develop plan for Version 1 I&T test program due 3/1/96.
- Continue staff technical specialty planning and detailed ECS system training.
- Begin planning for test witness of EDOS and EBNet tests later this year as early deliveries emerge.
- Meet with I&T Manager to address process concerns on overall I&T planning, scheduling, and short term action items.
- Support program briefings as required.

Task # 13B: IV&V Special Studies

a) Task Accomplishments

- Completed executing the last 35 V0 IMS test scenarios.
- Completed data collection for Version 0 World Wide Web Gateway testing. Also, analyzed WWW V0 Gateway test data and prepared TAM documenting results.
- Developed three X-Runner scripts to perform a series of queries through the LaRC and MSFC V0 clients.
- Investigated alternatives for porting the V0 IMS client to a UNIX workstation.
- Began manual scenario execution and data collection for the Extended Duration V0 testing.

b) Issues/Concerns

- X-Runner in “analog” mode is unable to automatically detect a screen change (pixel turning green) in order to collect a scenario completion timestamp. It also fails when the DAACs change their GUI screen configurations. These and other problems with X-Runner in the “analog” mode have made it impractical to automate V0 testing. We will not be successful with automated testing until we have a ported V0 IMS client installed on an X-Runner workstation. This configuration will allow us to change from “analog” to the “Context Sensitive” Mode and get around these problems.

Finding a suitable location for the V0 IMS ported client is proving difficult. There are a limited number of ported client versions available and they require specific operating system and system software releases. We are looking for a match between the available client versions and available workstations.

c) Subcontractor Performance

- CTA is the lead for this task. Their progress has been very good.

d) Planned Activities

- Complete plan for V0 IMS controlled load testing and start the testing. Begin background investigations.
- Complete background investigations for ported client test effort. Select target workstation and install IMS ported client.
- Continue executing GUI scenarios and collecting performance data for Extended Duration V0 analysis.
- Continue efforts to use X-Runner for automated testing.
- Support program meetings/briefings as required.

**Appendices B and C
have been removed
due to proprietary content.**